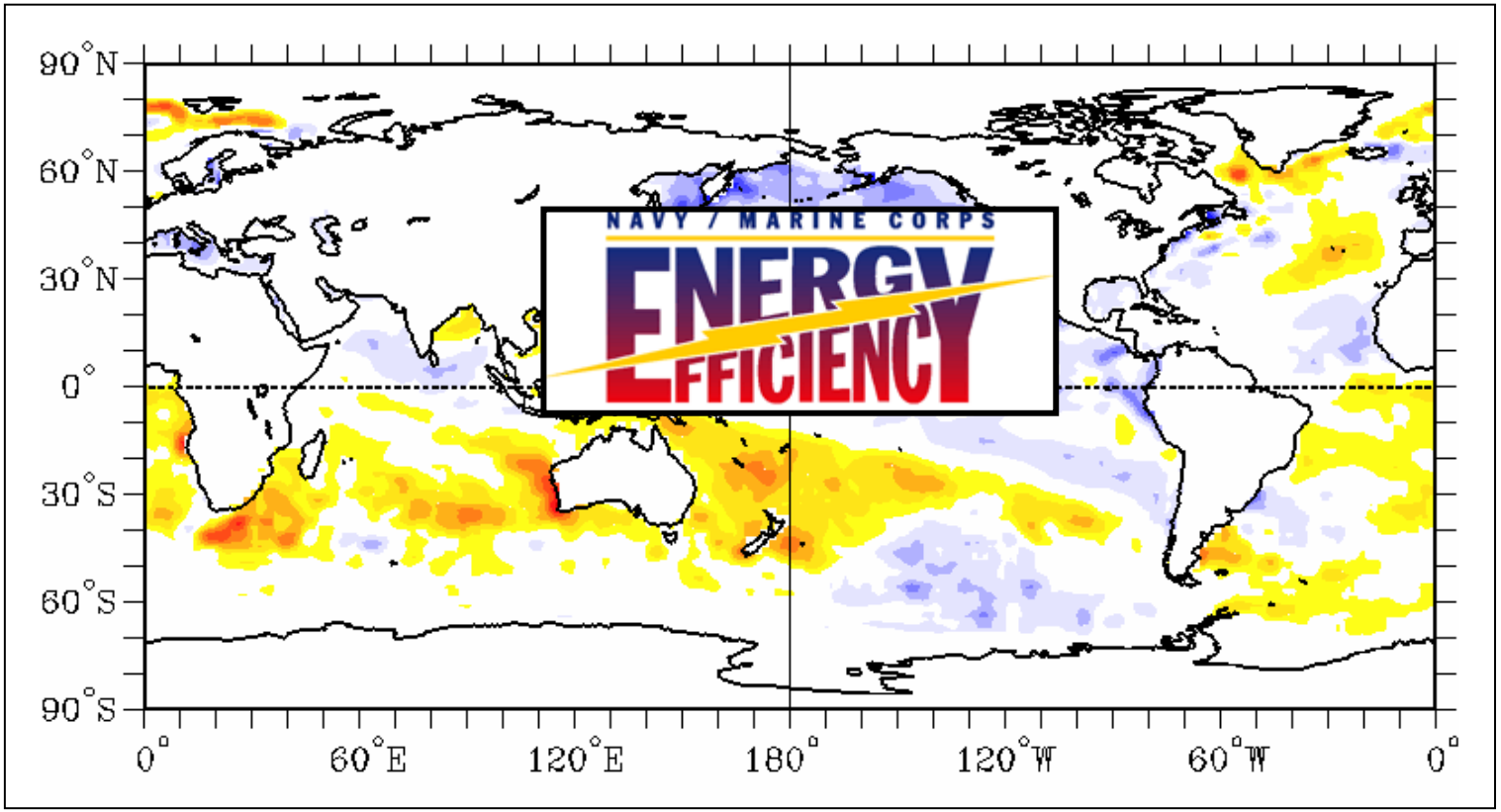
NAVLANTMETOCCEN
Energy Conservation Forecasts Program
(ECFP)



PROGRAM BRIEF

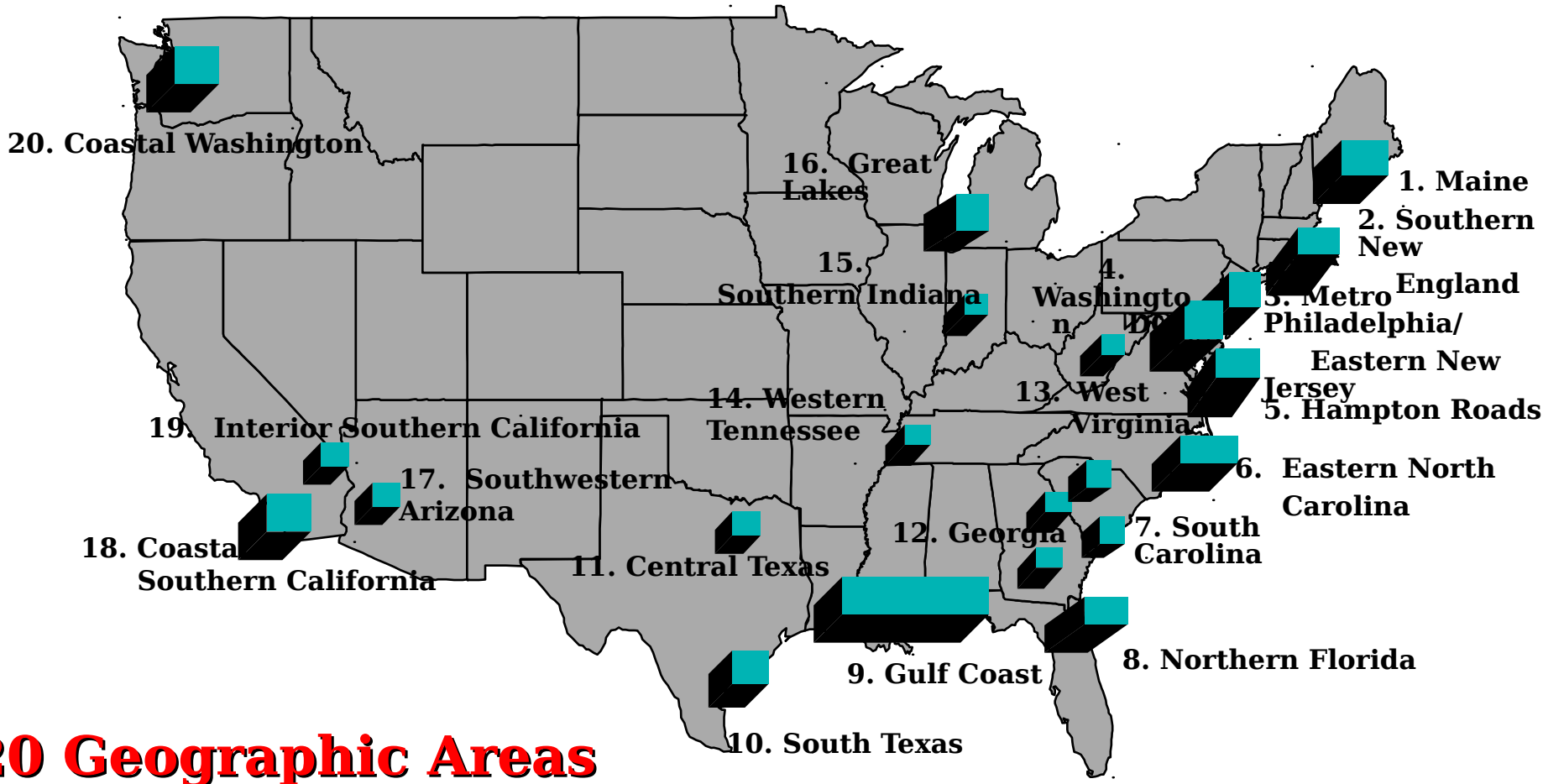
MISSION STATEMENT

To optimize efficiency, reduce energy consumption, save fuel, and avoid energy related costs throughout DON by providing energy management decision-makers with tailored long-range weather forecasts at minimal cost

SERVICES PROVIDED

- **10-Day Weather Forecasts - 1536/Month**
- **30-day Temperature Outlooks - 129/Month**
- **Monthly Utility Usage Forecasts - 15/Month**
- **Long-Lead Seasonal Temperature and HDD/CDD Forecasts for the following 12 months - 129/Quarter**
- **Steam On/Off Recommendations - 258/Year**

ECFP CUSTOMER SITES

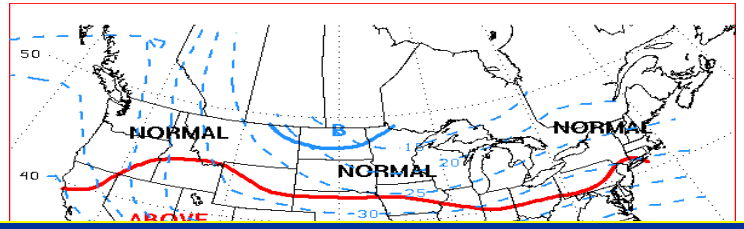


20 Geographic Areas
65 Sites
129 Customers

As of 21 AUG 01

ECFP VALUE-ADDED

NOAA 6-10 Day Forecast



NLMOC Tailored 10-Day Forecast

	Naval Atlantic Meteorology and Oceanography Center			
	Long-Range Forecasts Department			
	NAVMETOCCOM Energy Conservation Program			
	10-Day Forecast for:			
	NAS Norfolk VA			
Day	Date	Max Temp	Min Temp	Significant Weather
	15-Feb	48	35	mcldy bcmg pcldy wnd>15kts
	16-Feb	66	43	pcldy ocnl mcldy wnd<15kts
	17-Feb	59	40	pcldy bcmg mcldy wnd<15
	18-Feb	66	45	cldy/ra-rw- pcpn<.15" wnd>15kts
	19-Feb	64	47	cldy bcmg mcldy/rw- pcpn<.20" wnd>15kts
	20-Feb	55	42	pcldy wns>15kts
	21-Feb	48	31	mcldy bcmg pcldy/rasn- (am) pcpn<.05" wnd>15kts
	22-Feb	56	35	pcldy bcmg cldy wnd>15kts
	23-Feb	44	37	cldy/ra- pcpn<.10" wnd<15kts
	24-Feb	52	36	mcldy bcmg pcldy/ra- pcpn<.05" wnd>15kts
Summary Energy Forecast for the 10-day Period				
		Climatology	Forecasted	
egree Days (HDD):		211	176	
egree Days (CDD):		0	0	

ECFP Value Added:

- 12 hr resolution
- Point vs area fcst
- Forecast actual temps
- Forecast HDD/CDD
- NCEP MOS:
  - No D+9, D+10
  - Limited availability

ECFP VALUE-ADDED

NOAA Seasonal

ECFP Value Added:

- Monthly resolution
- Point vs area fcst
- No statistical jargon
- Forecast HDD/CDD
- Steam on/off recommendation
s

NLMOC Tailored Seasonal Forecast

Subj: SEASONAL OUTLOOK

4. The following table provides projected monthly mean temperatures from September 1999 through August 2000, as well as monthly mean heating/cooling degree-day requirements.

Month	Climatology			Projected		
	Mean Temp (°F)	Heating Degree Days	Cooling Degree Days	Mean Temp (°F)	Heating Degree Days	Cooling Degree Days
September 99	73.4	6	264	74.1	2	287
October 99	63.0	116	62	63.0	116	62
November 99	53.5	349	11	53.8	327	12
December 99	44.4	632	1	45.7	591	2
January 00	41.3	728	1	42.5	687	1
February 00	42.7	621	1	44.0	591	1
March 00	49.7	480	10	50.4	447	11
April 00	58.7	216	39	59.1	202	42
May 00	67.3	57	137	67.8	41	151
June 00	75.5	3	325	76.3	1	346
July 00	80.0	0	473	80.8	0	506
August 00	78.7	0	432	79.5	0	470

5. For further amplification or consultation concerning this outlook, please contact my Customer Liaison Forecaster, Mr. John Tramack at DSN 565-1131/(757) 445-1131 or e-mail at (tramack@nlmoc.navy.mil).

ECFP VALUE

- **Similar forecasting services from commercial providers cost $5,000 - $7,500 annually for a single station**
  - **Total cost to Navy: two to three times more than ECFP annual funding requirement**
- **NOAA/National Weather Service (NWS) forecasts are too general to meet customer needs**
- **ECFP Value Added:**
  - **Tailored, site-specific (vs Area) forecasts**
  - **Products are plain-language, in terms customers need and understand**
  - **Specific heating/AC recommendations**
  - **Personal consultation with ECFP team of experts**

HOW DO CUSTOMERS USE ECFP SERVICES?

- Seasonal “Steam-On” and “Steam-Off”
- Electrical peak load shaving
- LP gas purchase on the Spot Market
- Planning facility/equipment maintenance periods
- Short and long term utilities production planning

HOW ARE SAVINGS COMPUTED?

<u>EXAMPLE</u>: Late Steam On

- **Normal (Climatological) date for activating facility heat: 30 NOV**
- **ECFP recommends keeping heat secured until week of 20 - 24 DEC due to forecasted warm spell**
  - **Average gas usage:**

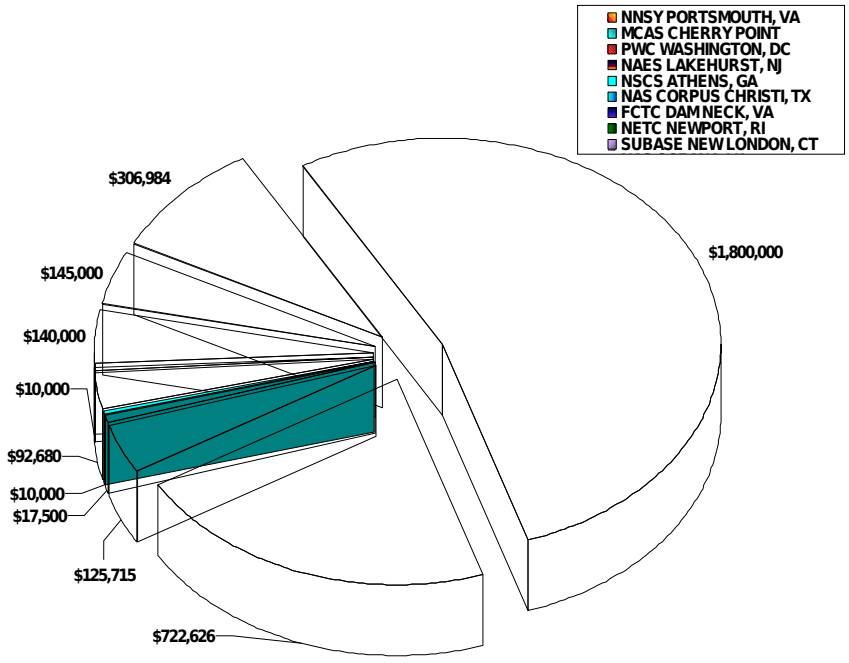
    610 MBTU/week (prior to heat on)

    3575 MBTU/week (after heat on)
- **Calculated savings:**

  (3575 - 610 MBTU/week) * 3 weeks * $3.12/MBTU = $27,750

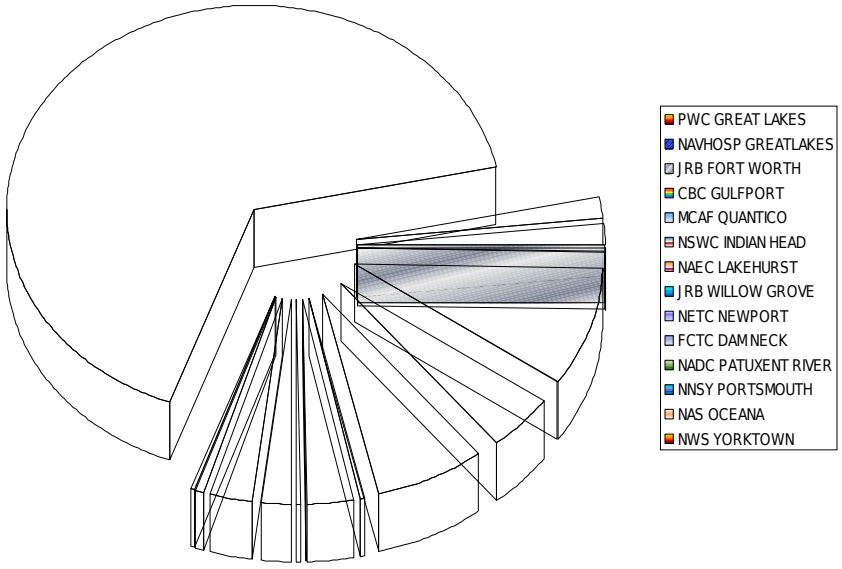
RECENT ECFP SAVINGS DATA

FY99 ECFP SAVINGS



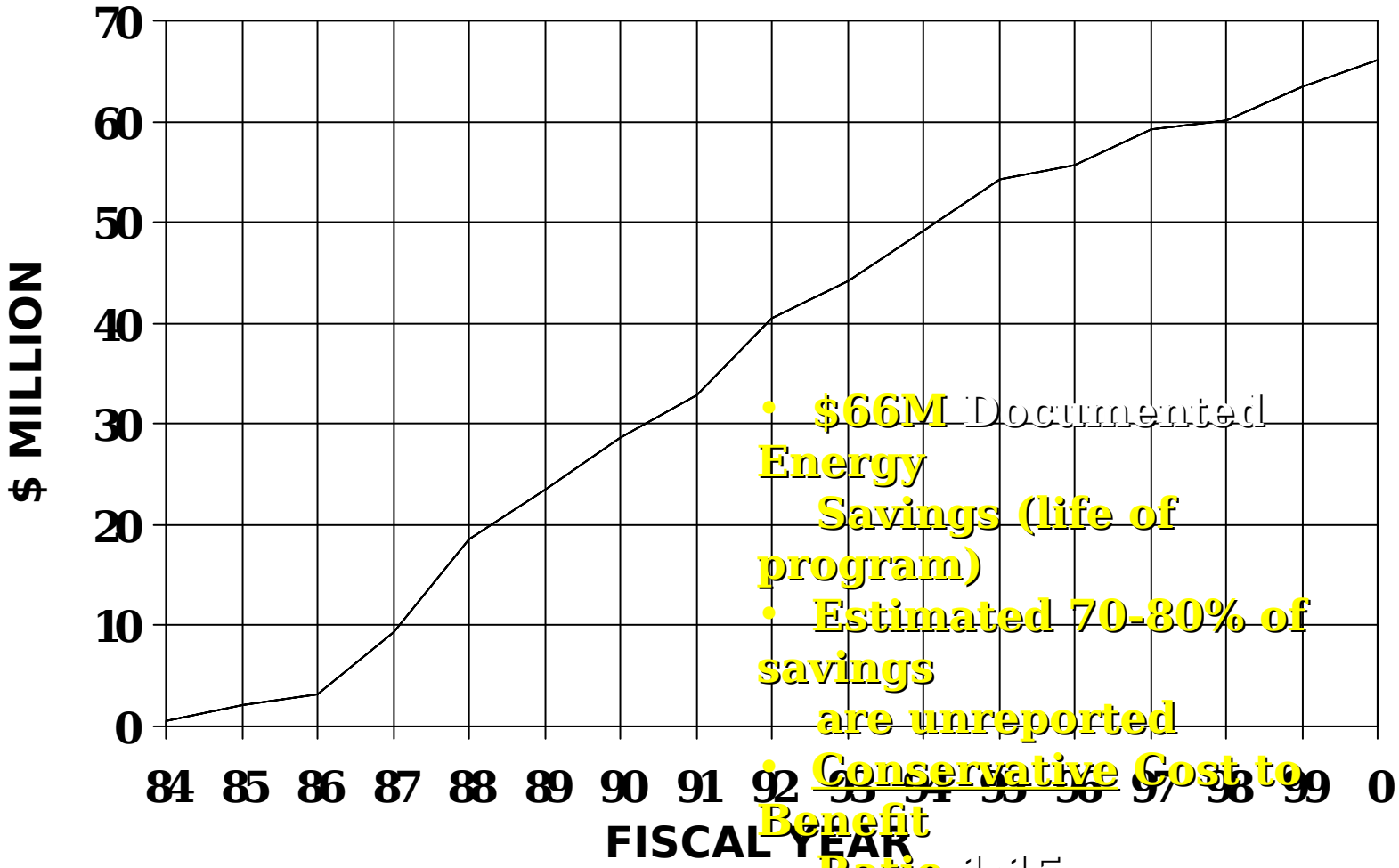
- **$3.4 Million Documented Savings (11% Response Rate)**
- **Estimated Total Savings: $12 Million**

FY00 ECFP SAVINGS



- **$2.6 Million Documented savings (14% Response Rate)**
- **Estimated Total Savings: $11.2 Million**

ECFP CUMULATIVE *DOCUMENTED* SAVINGS



- $66M Documented Energy Savings (life of program)
- Estimated 70-80% of savings are unreported
- Conservative Cost to Benefit Ratio 1:15

ECFP SAVINGS

Proven program with results documented by customers

- **$2.6 Million reported savings attributed to 14% of customers in FY 2000 - conservative annual savings estimate - $11.2 Million**

- **4 out of 4 FY00 SECNAV CONUS Energy Conservation Award winners (Shore Categories) are ECFP Customers (NSWC Crane, NSGA Sugar Grove, MCRD Parris Island, NUWC Keyport)**

- **2 out of 4 FY00 Federal Energy Management Program Award winners are ECFP customers (NAS Pensacola and NWS Yorktown)**

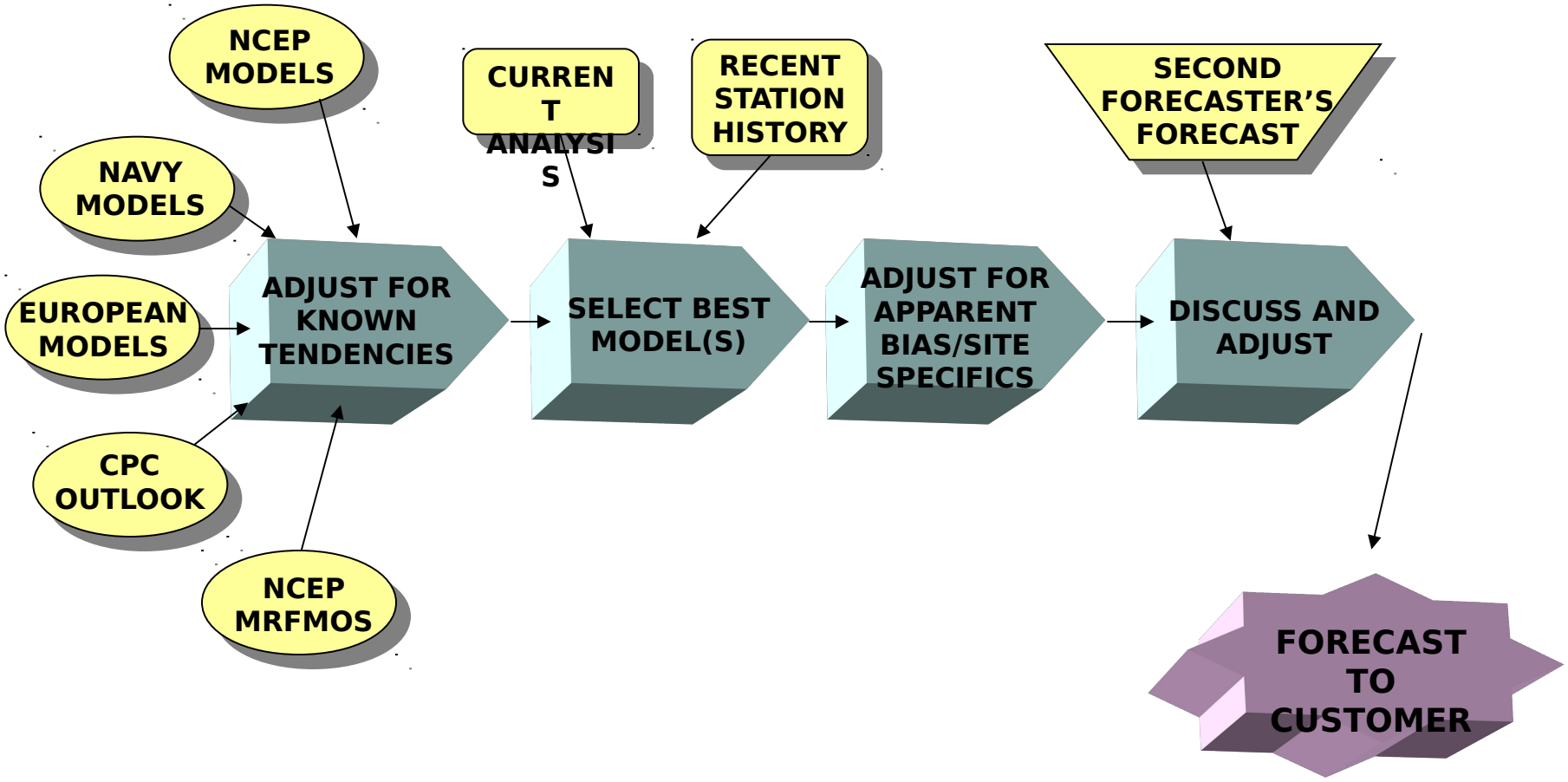
- **ECFP received special Energy Conservation Award from Norfolk Naval Shipyard for helping them avoid spending over $1 Million in 1999 alone**

FORECAST TOOLS

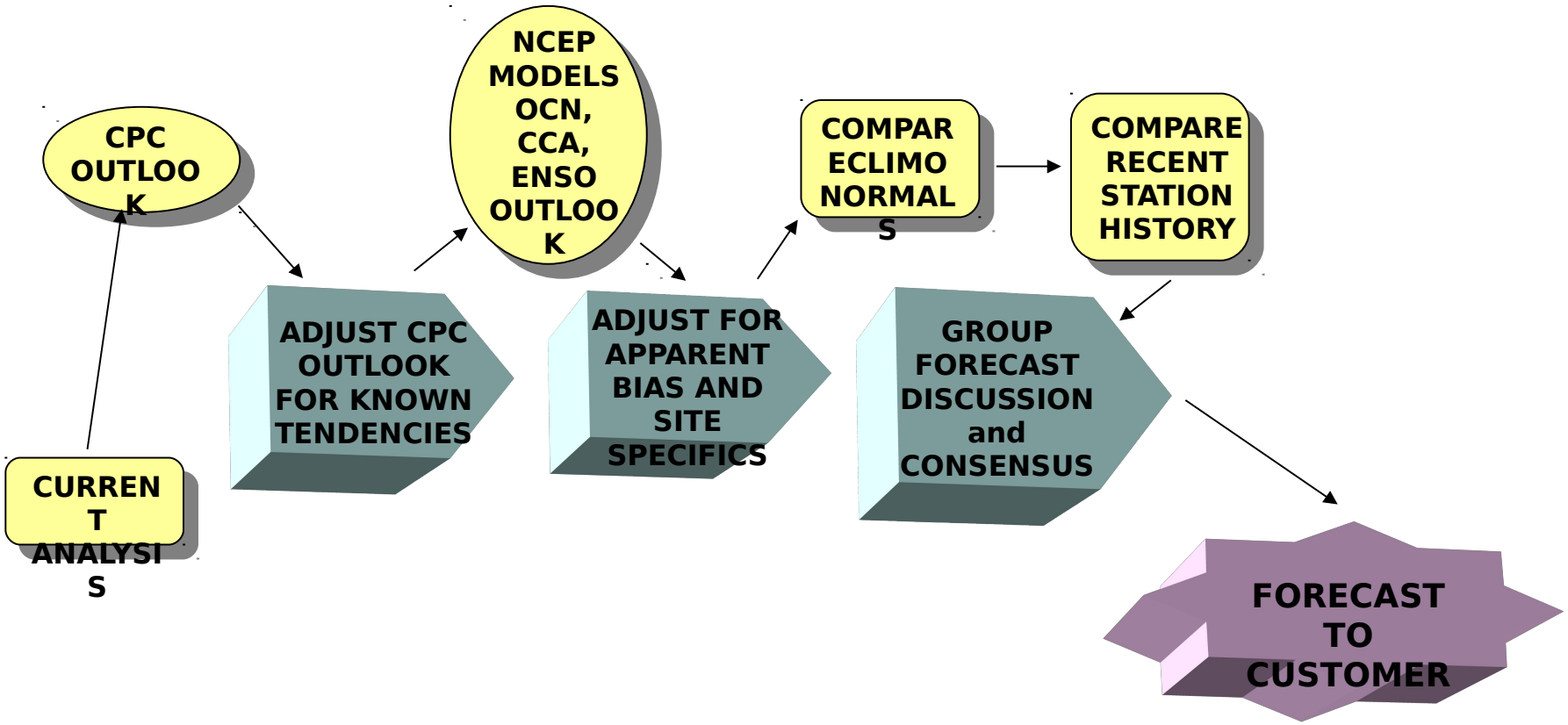
MODELS: NOGAPS
MRF
MRF/MOS
AVN
MM5
NGM
(other data as available)

PRODUCTS: COLA/IGES 10-day Outlooks
CPC 6-10 Day Outlooks
CPC 30-day Outlooks
CPC Seasonal Outlooks
NCEP ENSO Discussions
(other data as available)

10-DAY FORECAST PROCESS



30-DAY and SEASONAL FORECAST PROCESS


CPC OUTLOOK
NCEP MODELS OCN, CCA, ENSO OUTLOOK
COMPAR ECLIMO NORMALS
COMPARE RECENT STATION HISTORY
CURRENT ANALYSIS
ADJUST CPC OUTLOOK FOR KNOWN TENDENCIES
ADJUST FOR APPARENT BIAS AND SITE SPECIFICS
GROUP FORECAST DISCUSSION and CONSENSUS
FORECAST TO CUSTOMER

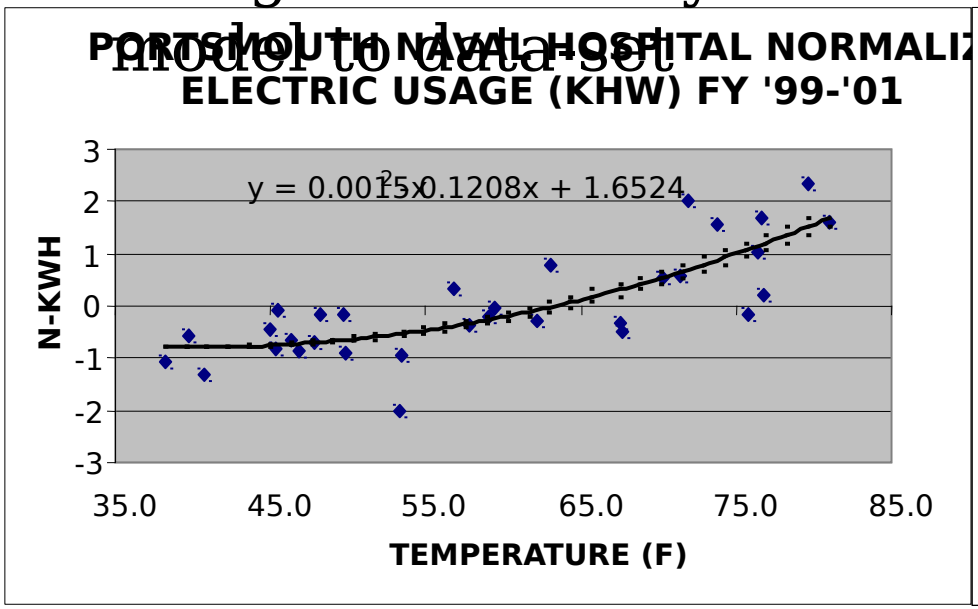
ECFP UTILITIES FORECAST PROCESS

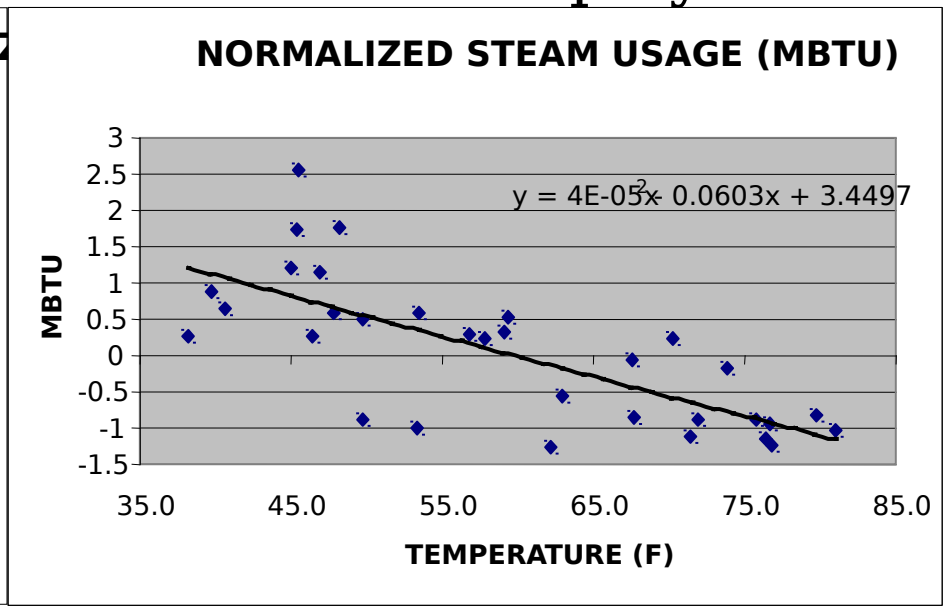
- **Based on statistical relationships**
  - **Detailed historical utility demand (2-4 years) record required to initialize**

- **Continuing customer involvement and feedback are essential for successful forecasts**

ECFP UTILITIES FORECAST

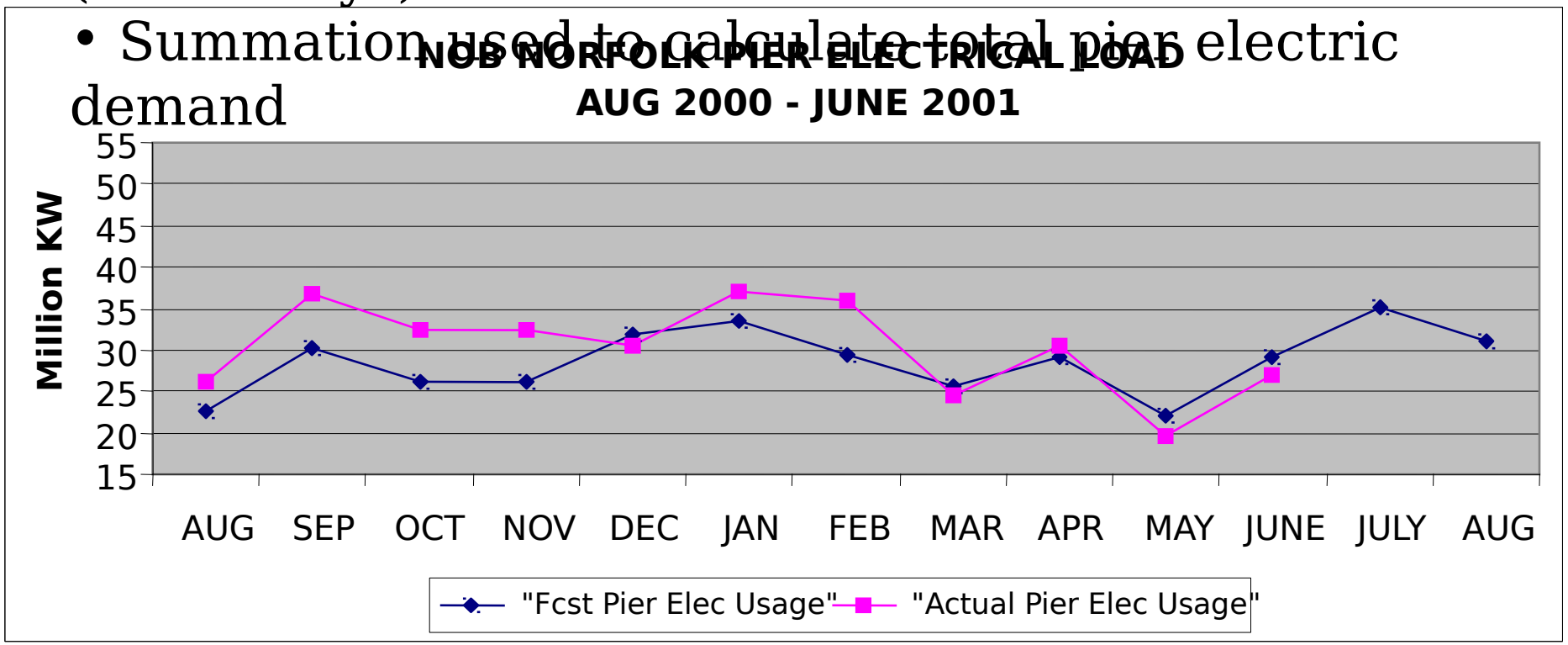
- Energy usage model development
  - Historical energy usage is normalized to reduce variance
    - Data-set mean is subtracted from each data point
    - Data points are divided by data-set standard deviation
  - Regression analys is used to fit 2nd order polynomial model to data-set





ECFP PIER LOAD UTILITIES FORECAST

- Providing forecast to Norfolk and Mayport
- Ship schedules used to determine total pier loading
- Ship type shore-power cable number vs. electric demand used to calculate total ship electric demand (Cable Days)
- Summation used to calculate total pier electric demand



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NAVAL ATLANTIC METEOROLOGY AND OCEANOGRAPHY CENTER
ONE STEP AHEAD

Questions ?